

What is claimed is:

1. A memory device for performing a refresh operation in a self-refresh period instigated for every constant time interval after entering into a self-refresh mode, comprising:
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a low-power controller outputting a enable signal for enabling the power supply means during the self-refresh period after being enabled in the self-refresh mode; and

a power supply means receiving the enable signal for
10 supplying a low and a high voltages used in an internal circuit by using an external supply voltage and a ground voltage,

wherein the low voltage is lower than the ground voltage and the high voltage is higher than the external supply
15 voltage.

2. The memory device of claim 1, wherein the power supply means for refreshing stored data during a self-refresh period operated for every predetermined interval after entering into
20 a self-refresh mode includes:

a high power generator for supplying the high voltage to the internal circuit, the high voltage being higher than the power voltage; and

a low power generator for supplying the low voltage to
25 the internal circuit, the low voltage being lower than the ground voltage.

3. The memory device of claim 2, wherein the power supply means further includes a normal-power generator for supplying an internal voltage to the internal circuit.

5 4. The memory device of claim 1, wherein the low power controller includes;

 a first NAND gate receiving a self-refresh enable signal enabled in the self-refresh mode and a self-refresh termination signal enabled at a moment of terminating the
10 self-refresh period;

 a second NAND gate receiving an output signal of the first NAND gate and an output signal of a third NAND gate; and

 a third NAND gate receiving an inverted signal of a self-refresh operating signal enabled at a moment of beginning the
15 self-refresh period and an output signal of the second NAND gate.

5. The memory device of claim 3, wherein the high voltage generator includes:

20 a high voltage sensor for sensing the second power voltage level and being disabled in the self-refresh period;

 a generator for generating a clock signal by being controlled by a result sensed by the high voltage sensor; and

 a high voltage generating pump for generating a high
25 voltage by being controlled by the clock signal.

6. A method for operating the memory device, comprising

the steps of:

entering into a self-refresh mode; and

operating a refresh operation in a self-refresh period
instigated for every constant interval of the self-refresh
5 mode,

wherein the internal power is supplied during the self-
refresh period of the self-refresh mode.